

CLAIMS:

1. A centrifuge bowl for use in an apparatus for separating intermixed particulate materials of different specific gravity in a slurry where the apparatus includes a feed duct for feeding the slurry into the bowl so that during
5 rotation of the bowl the intermixed particulate materials flow over a peripheral wall of the bowl for collection of heavier particulate materials on the peripheral wall and for discharge of the lighter particulate materials in the slurry from the open mouth and a launder for collecting the lighter particulate materials in the slurry discharged from the open mouth, the bowl comprising

10 a base and a peripheral wall surrounding an axis passing through the base and generally upstanding from the base to an open mouth;

and a plurality of annular recesses on the peripheral wall at axially spaced positions over which the materials pass, when fed from the supply duct, so that the heavier particulate materials collect in the recesses;

15 each recess being defined by two recess side walls extending generally outwardly from the axis from an open mouth of the recess toward a base of the recess at the peripheral wall and converging toward one another;

a fluidizing liquid injection system for fluidizing the materials in each of the recesses including a liquid supply and at least one liquid entry opening extending
20 from the supply into the recess at or closely adjacent the base of the recess;

and a plurality of removable insert members each mounted in a respective one of the recesses;

each insert member being mounted in the recess at a position therein so as to define a channel between the side walls, inwardly of the base and outwardly of the strip member within which the fluidizing liquid from the liquid entry opening can flow within the recess;

5 each insert member having an inwardly facing surface which spans the space between the side walls at the strip member so as to confine the materials within the volume of the recess defined by the side walls and inwardly of the inwardly facing surface of the strip member;

 each insert member being formed of an imperforate material having an
10 array of fluid injection holes defined therethrough which allow the injection of jets of fluidizing liquid from the channel through the insert member into the volume.

2. The bowl according to Claim 1 wherein each insert member is sufficiently thick so that each injection hole has a specified direction along an axis of the hole tending to direct the jet of fluidizing liquid in a direction along the axis of the
15 hole.

3. The bowl according to Claim 1 wherein the injection holes are smaller in transverse dimensions than the fluid entry openings..

4. The bowl according to Claim 3 wherein the total area of the fluid entry openings is greater than the total area of the injection holes.

20 5. The bowl according to Claim 1 wherein the side walls each include a shoulder onto into which an outer surface of the insert member engages.

6. The bowl according to Claim 1 wherein each insert member has the side edges including one or more barbs arranged to engage into the side wall of the recess.

7. The bowl according to Claim 1 wherein the side walls of each
5 recess are molded from a resilient plastics material and wherein each insert member is formed from a material which is harder than the resilient plastics material so that the side edge thereof at the surface projects into the plastics material.

8. The bowl according to Claim 1 wherein each insert member
10 includes at least two rows of holes at axially spaced positions across the width of the insert member.

9. The bowl according to Claim 1 wherein each insert member has a projecting portion extending therefrom inwardly toward the axis.

10. The bowl according to Claim 9 wherein each insert member
15 includes at least two rows of holes at axially spaced positions across the width of the insert member and wherein the projecting portion is arranged between the rows.

11. The bowl according to Claim 1 wherein some of the insert members are imperforate so as to prevent flow of liquid from the channel to the volume.

12. The bowl according to Claim 1 wherein the insert members of
20 alternate ones of the recesses are imperforate.

13. The bowl according to Claim 1 wherein each recess from the insert member to the inner edge of the side walls of the recess has a depth greater than 1.0 inches and preferably greater than 2.0 inches.

14. The bowl according to Claim 1 wherein each side wall of the recess from its point of contact with the surface of the insert member lies on an imaginary conical surface.

15. A replacement insert member: ✓

5 for use in a centrifuge bowl for use in an apparatus for separating intermixed particulate materials of different specific gravity in a slurry where the apparatus includes:

a feed duct for feeding the slurry into the bowl so that during rotation of the bowl the intermixed particulate materials flow over a peripheral wall of the bowl for collection of heavier particulate materials on the peripheral wall and for discharge of the lighter particulate materials in the slurry from the open mouth;

a launder for collecting the lighter particulate materials in the slurry discharged from the open mouth;

a bowl;

15 the bowl having a base and a peripheral wall surrounding an axis passing through the base and generally upstanding from the base to an open mouth;

the bowl having a plurality of annular recesses on the peripheral wall at axially spaced positions over which the materials pass, when fed from the supply duct, so that the heavier particulate materials collect in the recesses;

20 each recess being defined by two recess side walls extending generally outwardly from the axis from an open mouth of the recess toward a base of the recess at the peripheral wall and converging toward one another;

the bowl having a fluidizing liquid injection system for fluidizing the materials in each of the recesses including a liquid supply and at least one liquid entry opening extending from the supply into the recess at or closely adjacent the base of the recess;

5 the replacement insert member comprising an elongate insert body arranged to be mounted in a respective one of the recesses so as to define a channel between the side walls, inwardly of the base and outwardly of the insert member within which the fluidizing liquid from the liquid entry opening can flow around the recess;

10 the elongate insert body having an inwardly facing surface which is arranged to span the space between the side walls at the insert member so as to confine the materials within the volume of the recess defined by the side walls and inwardly of the surface of the insert member;

 the insert body being formed of an impermeable material having an
15 array of fluid injection holes defined therethrough which allow the injection of jets of fluidizing liquid.

 16. The insert member according to Claim 15 wherein the insert body is sufficiently thick so that each injection hole has a specified direction along an axis of the hole tending to direct the jet of fluidizing liquid in a direction along the axis
20 of the hole.

 17. The insert member according to Claim 15 wherein the insert body has the side edges including one or more barbs arranged to engage into the side wall of the recess.

18. The insert member according to Claim 15 wherein the insert body includes at least two rows of holes at axially spaced positions across the width of the insert member.

19. The insert member according to Claim 15 wherein the insert
5 body has a projecting portion extending therefrom inwardly toward the axis.

20. The insert member according to Claim 19 wherein the insert body includes at least two rows of holes at axially spaced positions across the width of the insert member and wherein the projecting portion is arranged between the rows.